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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SPEARS, ERIC J

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/075,562

Applicant(s)

ALSOBROOKS ET AL.

Examiner

Eric J Spears

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2-11, 16-24, and 25-33 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

✓ Recited subject matter in claims 2, 8, 16, 25, 27, 29 is not enabled by the specification as the claims use the term "PC board" to describe a flexible ribbon cable which has circuit elements attached to it, even though the term "PC board" is well known in the art in reference to a rigid insulating sheet with circuits and conducting interconnections attached to it. The specification does not describe the invention utilizing a printed circuit board in the convention sense of the term.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-24, and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding Claim 1, the intended meaning of the term "unique pattern" on lines 7 and 8 is unclear. The term "unique" implies this pattern exists only in one location (i.e. only one code disk). It is assumed that this term is supposed to refer (and will be examined as if it did) to a pattern that does not repeat itself, thereby marking at least one location uniquely, as opposed to other locations of the code disk.

✓ Regarding Claims 4 and 28 are indefinite as they apply a limitation to the term "PC board" which is not encompassed by the recitation of the term in the base claim(s) (See 112 first paragraphs rejections above). In effect Claims 4 and 28 redefine the scope of the claim to include subject matter not included in the base claim.

✓ Claim 7 recites the limitation "the LED" in line 3. There is insufficient antecedent basis for this limitation in the claim.

✓ Regarding Claim 7, the use of the word "continuously", on line 3, renders the claim indefinite when combined with the phrase "at timed intervals". The use of the word "continuously" implies the photodetector never stops reading the code disk. It is assumed that the claim intends to mean reading the code disk repeatedly, and at timed intervals. Given the recitation of LED flashing, the claim will be examined as meaning repeated reading and not necessarily constantly reading.

✓ Regarding Claim 15, the intended meaning of the term "outwardly facing gear teeth" given that the teeth are on an "inside diameter" and are taught by the specification as being on the inner surface of the ring. What is the difference between "inwardly" and "outwardly" facing gear teeth? The only apparent difference is that "outwardly" teeth would be on the outer surface of the ring, while "inwardly" would be on

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the inner surface. Given the description of the specification, the claim will be examined without the phrase "outwardly facing".

✓ Further regarding Claim 15, the term "inside diameter of the housing" will be examined as reading "inside surface of the housing" as the housing has not been recited as being any given shape. It should be noted that the use of the term diameter implies circularity.

Claims not mentioned are indefinite due to their dependency from an indefinite base claim.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 12, 25, and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Sano (6,130,425).

Regarding Claim 1, Sano teaches a rotational position sensor comprising, a hub 4 and 5, a code disk 6, and a housing 1. Sano teaches the code disk gives a rotational position (Col. 7, lines 3-6).

Regarding Claim 12, Sano teaches a turn ring 10 and sensors 13 which cooperate to determine a number of turns.

Regarding Claim 25, Sano teaches a rotational position sensor comprising, a hub 4 and 5, a code disk 6, and a housing 1. Sano teaches the code disk gives a rotational position (Col. 7, lines 3-6). Sano teaches a turn ring 10 and sensors 13 which cooperate to determine a number of turns. Sano also teaches a printed circuit board which is not illustrated (Col. 7, lines 16-17).

Regarding Claim 32, Sano teaches the markings are of cutouts 6a.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, 5-11, 14, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano (6,130,425).

Regarding Claim 2, Sano teaches a printed circuit board and a photo-interrupter 9 (Col. 7, lines 16-17). However, Sano does not teach the photo-interrupter 9 being attached to the particular circuit board. However, it would have been obvious to one of ordinary skill in the art to attach the photo-interrupter to the preexisting circuit board in order to eliminate the need for a separate board either inside the housing or outside.

Regarding Claim 3, the modified device of Sano teaches the code disk has cutouts (Col. 6, line 66 to Col. 7, lines 3). Sano does not teach the material of the code disk. However, the exact material would have been an obvious design choice to one of

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ordinary skill in the art in order to provide for a material which is cheap, heat resistant, and opaque to the light being used in the photo-interrupter.

Regarding Claim 5, the modified device of Sano does not use the explicit term "bit", however, Sano teaches the photo-interrupter comprising at least two detectors along a code track (See Fig. 4). The detector 9 would therefore read at least to "bits" of data which is enough to determine a location along the disk. It should also be noted that the photo-interrupter has a finite size and therefore exists at an arbitrary number of positions simultaneously.

Regarding Claim 6, the modified device of Sano does not teach the type of photodetector used in the photo-interrupter. However, choosing a CCD as the type of photodetector would have been an obvious design choice to one of ordinary skill in the art, in order to provide a photodetector which is readily available.

Regarding Claim 7, the modified device of Sano does not teach the type of light source used in the photo-interrupter. However, choosing an LED as the type of light source would have been an obvious design choice to one of ordinary skill in the art, in order to provide an inexpensive light source which is readily available. Further it would have been obvious to one of ordinary skill in the art to pulse the LED during detector readouts in order to save energy.

Regarding Claim 8, the modified device of Sano teaches the PC board has a plurality of sensors 13 for determining a number of rotations (Col. 7, lines 16-17).

Regarding Claim 9, the modified device of Sano teaches the sensors may be magnetic sensors (i.e. Hall sensors) (Col. 3, lines 44-50).

Regarding Claim 10, the Hall sensors of the modified device of Sano teaches would by necessity have more than one signal type, in order to signal a change in a condition.

Regarding Claims 11 and 33, the modified device of Sano does not use the explicit term "bit". However, Sano teaches the photo-interrupter comprising at least two detectors along a code track (See Fig. 4). The detector 9 would therefore read at least to "bits" of data which is enough to determine a location along the disk. It should also be noted that the photo-interrupter has a finite size and therefore exists at an arbitrary number of positions simultaneously. Further, pixilated detectors are well known in the art and it would therefore have been obvious to one of ordinary skill in the art to provide pixilated detectors, such as CCDs, in order to provide a greater resolution for code reading. The precise number of pixels per bit would have been an obvious design choice to one of ordinary skill in the art to provide an appropriate resolution.

Regarding Claim 14, the modified device of Sano teaches the PC board has a plurality of sensors 13 for determining a number of rotations (Col. 7, lines 16-17). The modified device of Sano teaches the sensors may be magnetic sensors (i.e. Hall sensors) (Col. 3, lines 44-50). Sano does not explicitly teach placing a magnet on the turn ring. However, Sano teaches the magnetic type sensor comprises a magnet which is the analogue to the photo-interrupter 12 in Fig. 5. Therefore, it would have been obvious to one of ordinary skill in the art to place the magnet for sensing rotations on the turn ring, in order to implement a magnetic type sensor in direct analogy to the photo-interrupter as taught by Sano.



***Allowable Subject Matter***

Claim 13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claim 15 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

Claims 4 and 16-24 appear as if they would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, first and second paragraphs, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 26-31 appear as if they would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, first paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Spears whose telephone number is (703) 306-0033. The examiner can normally be reached on Monday-Friday from 10:00am to 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (703) 308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7724.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

EJS  
04/16/03

  
STEPHONE ALLEN  
PRIMARY EXAMINER